

CLAIM SET AS AMENDED

1. An internal combustion engine variable compression ratio system ~~comprising~~
comprising:

a piston ~~inner (5a)~~ inner connected to a connecting ~~rod (7)~~ via a piston ~~pin (6)~~,
pin;

a piston ~~outer (5b)~~ outer that, while being fitted around the outer periphery of the
piston ~~inner (5a)~~ inner so that the piston ~~outer (5b)~~ outer can slide only ~~in the~~ in an axial
direction and having an outer end face facing a combustion ~~chamber (4a)~~ chamber, is capable
of moving to a low compression ratio position (L) close to the piston ~~inner (5a)~~ inner, a high
compression ratio position (H) close to the combustion ~~chamber (4a)~~ chamber, and at least
one medium compression ratio position (M) between the low compression ratio position (L)
and the high compression ratio position (H), ~~and;~~ and

at least two sets of raising means (~~R₁, R₂~~) disposed in line in the axial direction
between an upper face of the piston inner (5a) and a lower face of the piston outer (5b),
outer opposed to the upper face of the piston inner, each set of raising means (~~R₁, R₂~~)
comprising a movable raising member (~~14₁, 14₂~~),

the movable raising members (~~14₁, 14₂~~) being individually capable of pivoting in a
peripheral direction between a non-raised position (A) and a raised position (B) around the
axis of the piston inner and outer (~~5a, 5b~~),

the piston ~~outer (5b)~~ outer being held at the low compression ratio position (L) when two of the movable raising members (14₁, 14₂) are pivoted to the non-raised position (A),

the piston ~~outer (5b)~~ outer being held at the medium compression ratio position (M) when only one of the movable raising members (14₁, 14₂) is pivoted to the raised position (B), ~~and~~

the piston ~~outer (5b)~~ outer being held at the high compression ratio position (H) when two of the movable raising members (14₁, 14₂) are pivoted to the raised position (B), and

each of the raising means further comprising a member opposed to the respective movable raising member and capable of changing a position in abutment against the movable raising member in the axial direction of the piston inner and piston outer.

2. (New) The internal combustion engine variable compression ratio system according to claim 1, wherein the at least two sets of raising means include first raising means and second raising means.

3. (New) The internal combustion engine variable compression ratio system according to claim 2, wherein the movable raising members of the first and second raising means include, respectively, an annular first movable raising member and an annular second movable raising member.

4. (New) The internal combustion engine variable compression ratio system according to claim 3, wherein the first raising means is formed from the annular first movable raising member pivotably fitted around a pivot portion formed coaxially and integrally on an upper face of the piston inner, and an annular first fixed raising member axially and slidably spline-coupled to a cylindrical pivot secured coaxially to an upper end face of the pivot portion.

5. (New) The internal combustion engine variable compression ratio system according to claim 4, wherein the annular first movable raising member is capable of reciprocatingly pivoting between the non-raised position (A) and the raised position (B) set around the pivot portion on the upper face of the piston inner, and a first cam mechanism that allows the annular first fixed raising member to move up and down along the cylindrical pivot accompanying the reciprocating pivoting is provided between the annular first movable raising member and the annular first fixed raising member.

6. (New) The internal combustion engine variable compression ratio system according to claim 3, wherein the second raising means includes the annular second movable raising member pivotably and axially slidably fitted around a pivot portion on a flat upper face of an annular second fixed raising member.

7. (New) The internal combustion engine variable compression ratio system according to claim 6, wherein the annular second movable raising member is capable of reciprocatingly pivoting between the non-raised position (A) and the raised position (B) set around a cylindrical pivot on the upper face of the annular second fixed raising member, and a second cam mechanism allows the piston outer to move up and down accompanying the reciprocating pivoting is provided between the second movable raising member and the piston outer.

8. (New) The internal combustion engine variable compression ratio system according to claim 1, further comprising a plurality of piston rings fitted around an outer periphery of the piston outer, the plurality of piston rings being in intimate sliding contact with an inner peripheral face of a cylinder bore.

9. (New) The internal combustion engine variable compression ratio system according to claim 1, wherein a top wall of the piston outer is arranged in a rectangular wave shape in a peripheral direction.

10. (New) The internal combustion engine variable compression ratio system according to claim 6, wherein the annular second fixed raising member also serves as a top wall of the piston outer.

11. (New) An internal combustion engine variable compression ratio system comprising:

a piston inner connected to a connecting rod via a piston pin;

a piston outer that, while being fitted around the outer periphery of the piston inner so that the piston outer can slide only in the axial direction and having an outer end face facing a combustion chamber, is capable of moving to a low compression ratio position (L) close to the piston inner, a high compression ratio position (H) close to the combustion chamber, and at least one medium compression ratio position (M) between the low compression ratio position (L) and the high compression ratio position (H); and

at least two sets of raising means disposed in line in the axial direction between the piston inner and the piston outer, each set of raising means comprising a movable raising member,

the movable raising members being individually capable of pivoting in a peripheral direction between a non-raised position (A) and a raised position (B) around the axis of the piston inner and outer,

the piston outer being held at the low compression ratio position (L) when two of the movable raising members are pivoted to the non-raised position (A),

the piston outer being held at the medium compression ratio position (M) when only one of the movable raising members is pivoted to the raised position (B), and

the piston outer being held at the high compression ratio position (H) when two of the movable raising members are pivoted to the raised position (B).

12. (New) The internal combustion engine variable compression ratio system according to claim 1, wherein the at least two sets of raising means include first raising means and second raising means.

13. (New) The internal combustion engine variable compression ratio system according to claim 2, wherein the movable raising members of the first and second raising means include, respectively, an annular first movable raising member and an annular second movable raising member.

14. (New) The internal combustion engine variable compression ratio system according to claim 3, wherein the first raising means is formed from the annular first movable raising member pivotably fitted around a pivot portion formed coaxially and integrally on an upper face of the piston inner, and an annular first fixed raising member axially and slidably spline-coupled to a cylindrical pivot secured coaxially to an upper end face of the pivot portion.

15. (New) The internal combustion engine variable compression ratio system according to claim 4, wherein the annular first movable raising member is capable of reciprocatingly pivoting between the non-raised position (A) and the raised position (B) set around the pivot portion on the upper face of the piston inner, and a first cam mechanism that allows the annular first fixed raising member to move up and down along the cylindrical pivot accompanying the reciprocating pivoting is provided between the annular first movable raising member and the annular first fixed raising member.

16. (New) The internal combustion engine variable compression ratio system according to claim 3, wherein the second raising means includes the annular second movable raising member pivotably and axially slidably fitted around a pivot portion on a flat upper face of an annular second fixed raising member.

17. (New) The internal combustion engine variable compression ratio system according to claim 6, wherein the annular second movable raising member is capable of reciprocatingly pivoting between the non-raised position (A) and the raised position (B) set around a cylindrical pivot on the upper face of the annular second fixed raising member, and a second cam mechanism allows the piston outer to move up and down accompanying the reciprocating pivoting is provided between the second movable raising member and the piston outer.

18. (New) The internal combustion engine variable compression ratio system according to claim 1, further comprising a plurality of piston rings fitted around an outer periphery of the piston outer, the plurality of piston rings being in intimate sliding contact with an inner peripheral face of a cylinder bore.

19. (New) The internal combustion engine variable compression ratio system according to claim 1, wherein the top wall of the piston outer is arranged in a rectangular wave shape in a peripheral direction.

20. (New) The internal combustion engine variable compression ratio system according to claim 6, wherein the annular second fixed raising member also serves as the top wall of the piston outer.